



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
07/340,777	04/20/89	HAMADA	H 212155P

BIRCH, STEWART, KOLASCH & BIRCH  
301 NORTH WASHINGTON STREET  
P.O. BOX 747  
FALLS CHURCH, VA 22046-0747

EXAMINER	
MAIL-H	
ART UNIT	PAPER NUMBER
254	5
DATE MAILED:	

10/11/89

This is a communication from the examiner in charge of your application.

COMMISSIONER OF PATENTS AND TRADEMARKS

This application has been examined       Responsive to communication filed on \_\_\_\_\_       This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), 0 days from the date of this letter.  
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1.  Notice of References Cited by Examiner, PTO-892.      2.  Notice re Patent Drawing, PTO-948.  
3.  Notice of Art Cited by Applicant, PTO-1449      4.  Notice of Informal Patent Application, Form PTO-152  
5.  Information on How to Effect Drawing Changes, PTO-1474      6. \_\_\_\_\_

Part II SUMMARY OF ACTION

1.  Claims 1-5 are pending in the application.

Of the above, claims \_\_\_\_\_ are withdrawn from consideration.

2.  Claims \_\_\_\_\_ have been cancelled.

3.  Claims \_\_\_\_\_ are allowed.

4.  Claims 1-5 are rejected.

5.  Claims \_\_\_\_\_ are objected to.

6.  Claims \_\_\_\_\_ are subject to restriction or election requirement.

7.  This application has been filed with informal drawings which are acceptable for examination purposes until such time as allowable subject matter is indicated.

8.  Allowable subject matter having been indicated, formal drawings are required in response to this Office action.

9.  The corrected or substitute drawings have been received on \_\_\_\_\_. These drawings are  acceptable;  
 not acceptable (see explanation).

10.  The  proposed drawing correction and/or the  proposed additional or substitute sheet(s) of drawings, filed on \_\_\_\_\_, has (have) been  approved by the examiner.  disapproved by the examiner (see explanation).

11.  The proposed drawing correction, filed \_\_\_\_\_, has been  approved.  disapproved (see explanation). However, the Patent and Trademark Office no longer makes drawing changes. It is now applicant's responsibility to ensure that the drawings are corrected. Corrections MUST be effected in accordance with the instructions set forth on the attached letter "INFORMATION ON HOW TO EFFECT DRAWING CHANGES", PTO-1474.

12.  Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has  been received  not been received  
 been filed in parent application, serial no. \_\_\_\_\_; filed on \_\_\_\_\_.

13.  Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

14.  Other

1. Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recited structure of claims 1-3 is not clear. The phrases "said thin film transistor being disposed at intersecting points that are formed by gate electrodes and source electrodes" (claim 1, lines 6-8), "and being disposed on said gate electrodes" (claim 1, line 9), and "having drain electrodes...." (claim 1, line 10) are not clear because each thin film transistor comprises a gate electrode, a source electrode and a drain electrode. How can a thin film transistor be disposed on its gate electrode and at the intersecting point formed by gate electrode and source electrode? However, the thin film transistor is disposed at the intersection between the gate lines and the data line, for example. The phrases "the edge portion of each of said gate electrode overlaps the edge portion of each of said picture element electrodes" (claims 1, lines 12-14) and "each of said gate electrodes includes gate line that extends from each of said gate electrodes" (claim 2, lines 2-4) are not clear. How do the gate electrodes extend to have gate lines?

2. Claims 4 and 5 are rejected because the features of oxidizing the surface of each of said gate electrodes and of plasma chemical vapor deposition do not further limit the structure of the liquid crystal

display device. They are drawn to the method of making the device. Therefore, these two claims are not treated on the merits.

3. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claims 1-3 are rejected under 35 U.S.C. 103 as being unpatentable over Koda et al or Okubo in view of Araki and Nishiura.

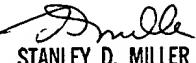
The basic structure of claims 1-3 is shows in Koda's Figures 1-3 or Okubo's Figures 1-6 and 17. However, Koda and Okubo do not mention a second insulating layer between the gate electrode and the picture element electrode. It would have been obvious to one skilled in the art to modify Koda's or Okubo's device by using a second insulating layer disposed at the overlapped portion between the gate electrode and the picture element electrode. It would have been obvious

because a second insulating layer is a matter of engineering design. The first insulating layer electrically insulates the gate electrode and the picture element electrode and the second insulating layer is nothing more than <sup>a</sup> repeat <sup>of</sup> the function of the first insulating layer. Further, Araki teaches an insulating layer is made of tantalum pentoxide (column 3, line 26) and Nishiura teach insulating material is silicon nitride (column 3, line 8). Therefore, it would have been ~~obvious to modify~~ <sup>obvious</sup> Koda's device by using tantalum pentoxide insulating layer and silicon nitride insulating layer as suggested by Araki and Nishiura. It would have been obvious because the insulation materials such as tantalum pentoxide and silicon nitride are old and well-known in this art as taught by Araki and Nishiura, for example.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

5. Any inquiry concerning this communication should be directed to Examiner Huy K. Mai at telephone number 703-557-4758.

  
Mai/dpl  
10/05/89

  
STANLEY D. MILLER  
SUPERVISORY PATENT EXAMINER  
GROUP ART UNIT 254